

Client's ref.: 91210
Our ref.: 0548-9815-USF/yianhou/kevin

What Is Claimed Is:

- 1 1. An exposure system, comprising:
2 a compensation unit to receive at least one adjustment
3 value of a corresponding equipment parameter, and
4 compensate a corresponding overlay parameter
5 according to the adjustment value and an adjustment
6 formula corresponding to the equipment parameter;
7 and
8 an exposure device to perform overlay and exposure
9 processes on a wafer using the compensated overlay
10 parameter.
- 1 2. The exposure system as claimed in claim 1 wherein the
2 compensation unit calculates a compensation value according to
3 the adjustment value and the adjustment formula, and compensates
4 the overlay parameter using the compensation value.
- 1 3. The exposure system as claimed in claim 2 wherein the
2 equipment parameter is FIA_X, the affected overlay parameter is
3 Offset_X, and the adjustment formula is,
4
$$B = (-1.0883 \cdot A) - 0.0016,$$

5 wherein A is the adjustment value and B is the compensation
6 value.
- 1 4. The exposure system as claimed in claim 2 wherein the
2 equipment parameter is FIA_Y, the affected overlay parameter is
3 Offset_Y, and the adjustment formula is,
4
$$B = (-1.0232 \cdot A) - 0.0023,$$

5 wherein A is the adjustment value and B is the compensation
6 value.

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1 5. The exposure system as claimed in claim 2 wherein the
2 equipment parameter is LSA_X, the affected overlay parameter is
3 Offset_X, and the adjustment formula is

$$4 \quad B = (-0.9958 * A) + 0.0011,$$

5 wherein A is the adjustment value and B is the compensation
6 value.

1 6. The exposure system as claimed in claim 2 wherein the
2 equipment parameter is LSA_Y, the affected overlay parameter is
3 Offset_Y, and the adjustment formula is,

$$4 \quad B = (-1.0042 * A) - 0.0004,$$

5 wherein A is the adjustment value and B is the compensation
6 value.

1 7. The exposure system as claimed in claim 2 wherein the
2 equipment parameter is Matching Offset X, the affected overlay
3 parameter is Shot Scaling X, and the adjustment formula is,

$$4 \quad B = (-84.853 * A) + 0.0639,$$

5 wherein A is the adjustment value and B is the compensation
6 value.

1 8. The exposure system as claimed in claim 2 wherein the
2 equipment parameter is Machine Scaling Y, the affected overlay
3 parameter is Shot Scaling Y, and the adjustment formula is,

$$4 \quad B = (-1.0053 * A) - 0.0193,$$

5 wherein A is the adjustment value and B is the compensation
6 value.

1 9. The exposure system as claimed in claim 2 wherein the
2 equipment parameter is Shot Skew, the affected overlay parameter
3 is Shot Ortho, and the adjustment formula is,

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4 $B = (-0.9422 * A) + 0.0094,$

5 wherein A is the adjustment value and B is the compensation
6 value.

1 10. The exposure system as claimed in claim 2 wherein the
2 equipment parameter is Machine Shot Rot, the affected overlay
3 parameter is Shot Rot, and the adjustment formula is,

4 $B = (-1.0247 * A) - 0.0214,$

5 wherein A is the adjustment value and B is the compensation
6 value.

1 11. An exposure method, comprising the steps of:
2 receiving at least one adjustment value of a corresponding
3 equipment parameter;
4 compensating a corresponding overlay parameter according
5 to the adjustment value and an adjustment formula
6 corresponding to the equipment parameter; and
7 performing overlay and exposure processes on a wafer using
8 the compensated overlay parameter.

1 12. The exposure method as claimed in claim 11 further
2 comprising calculating a compensation value according to the
3 adjustment value and the adjustment formula, and compensating
4 the overlay parameter using the compensation value.

1 13. The exposure method as claimed in claim 12 wherein the
2 equipment parameter is FIA_X, the affected overlay parameter is
3 Offset_X, and the adjustment formula is,

4 $B = (-1.0883 * A) - 0.0016,$

5 wherein A is the adjustment value and B is the compensation
6 value.

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1 14. The exposure method as claimed in claim 12 wherein the
2 equipment parameter is FIA_Y, the affected overlay parameter is
3 Offset_Y, and the adjustment formula is,

$$4 \quad B = (-1.0232 * A) - 0.0023,$$

5 wherein A is the adjustment value and B is the compensation
6 value.

1 15. The exposure method as claimed in claim 12 wherein the
2 equipment parameter is LSA_X, the affected overlay parameter is
3 Offset_X, and the adjustment formula is,

$$4 \quad B = (-0.9958 * A) + 0.0011,$$

5 wherein A is the adjustment value and B is the compensation
6 value.

1 16. The exposure method as claimed in claim 12 wherein the
2 equipment parameter is LSA_Y, the affected overlay parameter is
3 Offset_Y, and the adjustment formula is,

$$4 \quad B = (-1.0042 * A) - 0.0004,$$

5 wherein A is the adjustment value and B is the compensation
6 value.

1 17. The exposure method as claimed in claim 12 wherein the
2 equipment parameter is Matching Offset X, the affected overlay
3 parameter is Shot Scaling X, and the adjustment formula is,

$$4 \quad B = (-84.853 * A) + 0.0639,$$

5 wherein A is the adjustment value and B is the compensation
6 value.

1 18. The exposure method as claimed in claim 12 wherein the
2 equipment parameter is Machine Scaling Y, the affected overlay
3 parameter is Shot Scaling Y, and the adjustment formula is,

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4 $B = (-1.0053 * A) - 0.0193,$
5 wherein A is the adjustment value and B is the compensation
6 value.

1 19. The exposure method as claimed in claim 12 wherein the
2 equipment parameter is Shot Skew, the affected overlay parameter
3 is Shot Ortho, and the adjustment formula is,

4 $B = (-0.9422 * A) + 0.0094,$
5 wherein A is the adjustment value and B is the compensation
6 value.

1 20. The exposure method as claimed in claim 12 wherein the
2 equipment parameter is Machine Shot Rot, the affected overlay
3 parameter is Shot Rot, and the adjustment formula is,

4 $B = (-1.0247 * A) - 0.0214,$
5 wherein A is the adjustment value and B is the compensation
6 value.